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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/653,390	09/01/2000	Salvatore Coffa	99CT22053527 7100	
75	90 11/08/2002			
Christopher F Regan Allen Dyer Doppelt Milbrath & Gilchrist PA P O Box 3791			EXAMINER	
			WILLE, DOUGLAS A	
Orlando, FL 32	2802-3791		ART UNIT	PAPER NUMBER
			2814	
			DATE MAILED: 11/08/2002	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary Coffice Action Summary			Application No.	Applicant(a)			
Examiner Douglas AWille 2814 Period for Reply A SHORTNEID STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE of this communication appears on the cover sheat with the correspondence address A SHORTNEID STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION. A SHORTNEID STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION. I the predict or party specified showe is less than thing (V) diags, a rays with the address minimum of tably (30) days will be considered limely. I the prediction from the continue that the main address of the communication. I the prediction from the continue that the main address and the prediction to the prediction to the maining date of this communication. I the prediction of the prediction of the prediction of the prediction of the prediction to the maining date of the continue that the prediction of the prediction that the prediction of Claims 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213. Disposition of Claims 4) Claim(s) 28.30.39 and 41.47 is/are pending in the application. 4a) Of the above claim(s) is/are withdrawn from consideration. 5) Claim(s) 38.30.39 41.47 is/are rejected. 7) Claim(s) is/are ablected to by the Examiner. Application Papers 9) The specification is objected to by the Examiner. Application and the prediction of the priority documents have been received in abeyonce. See 37 CFR 1.85(a). 11) The proposed				Applicant(s)			
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Period for Reply A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ② MONTH(S) FROM THE MALING DATE OF THIS COMMUNICATION. Elements of time may be waitable as the analysis of the communication. If the period for reply appelled before the state of the period for reply decided before the state of the communication. If the period for reply appelled before is tess that hirty (20) days, a reply veilin the statutory minimum of thirty (20) days, a reply veilin the test of the period for reply appelled before the state of the communication. If the period for reply appelled before is tess that hirty (20) days, a reply veilin the state of the state of the state of the state of the period for reply application to become ABA/DONED (30 U.S.C. § 113). If all the office is the different term alleged and without the malities of the state of the scommunication. If all the communication (5) filled on 0.5 Sentember 2002. In this action is FINAL. 2b) This action is non-final. 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213. Is claim(s) 28.30-39 and 41-47 is/are pending in the application. 4) Claim(s) 28.30-39 and 41-47 is/are rejected. The claim(s) 28.30-39 and 41-47 is/are rejected. Claim(s) 15/are allowed. Claim(s) 15/are allowed. Claim(s) 15/are allowed. Claim(s) 15/are objected to. The drawing(s) filled on 15/are: all accepted or bloodiected to by the Examiner. Application Papers 9) The specification is objected to by the Examiner. 10) The drawing(s) filled on 15/are: all accepted or bloodiected to by the Examiner. If approved, corrected drawings are required in reply to this Office action. 11) The proposed drawing correction filled on 15/are: all accepted or bloodiected to by the Examiner. If approved, corrected drawings are required in reply to this Office action. 21) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 1			·				
A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION. - Extensions of time may be accusated with the communication. - Extensions of time may be accusable under the provision of 37 CPR 1.136(s). In no event, however, may a reply be timely filled and 58 (c) No Mortis from the mailing date of this communication. - It no precised or reply is a positional drove, the manufacture of the provision of the mailing date of this communication. - It no precised to reply is a positional drove, the manufacture of the communication of the provisional provisional date of the communication. - It no precised to reply is a positional drove, the manufacture of the communication of the communic		The MAILING DATE of this communication app	ears on the cover sheet with the	2814			
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Notice of Dransperson's Patent Drawing Review (PTO-948) Information Disclosure Statement(s) (PTO-1449) Paper No(s) Other:	│	f Draftsperson's Patent Drawing Review (PTO-948)	5\	PTO-413) Paper No(s) ent Application (PTO-152)			

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DETAILED ACTION

Claim Rejections - 35 USC § 112

- The following is a quotation of the second paragraph of 35 U.S.C. 112:
 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
- 2. Claims 30 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- 3. Claims 30 and 39 refer to a base-collector region of a transistor. It is not understood where this transistor is. The fact that a p/n junction is formed does not mean that it forms the base-collector region. It could be claimed that it forms the emitter-collection region of a bipolar transistor or one of the junctions of a Shockley or the drain-channel connection of a FET.

Claim Rejections - 35 USC § 103

- 4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
- 5. Claims 28, 30 39 and 41 47 rejected under 35 U.S.C. 103(a) as being unpatentable over Benton et al. in view of Franzo et al.
- 6. With respect to claims 28 and 38, Benton et al. show a laser (cover Figure and column 2, line 59 et seq.) with a semiconductor substrate 31, a doped p/n junction 33-34 which inherently has a depletion region, a shape (ridge) defining a waveguide (column 3, line 67) and is doped with Er. The Er is in the core region 33 which will contain the depletion region. The device can serve as a coherent light source (laser) (column 4, line 67). Benton et al. do not show the biasing source but it is assumed to provide a forward bias, as is customary with a laser. Franzo et al.

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show that for Er doped Si diodes a higher output is obtained when a reverse bias is applied and it would have been obvious to modify the Benton et al. device to include the reverse bias shown by Franzo et al. to provide a greater output. Note that neither Benton et al. nor Franzo et al. show the biasing device but since a bias is applied it must obviously be supplied by a biasing device.

- 7. With respect to claims 30 and 39, the Er is in the core region which contains the depletion region and the region forms a p/n junction with the surrounding regions.
- 8. With respect to claims 31 and 41, the rare earth is Er.
- 9. With respect to claims 32 and 42, a clad layer of SiO₂, 23 is shown by Benton et al. (see Figure 2 and column 3, line 66) and this has a lower dielectric constant than the Si.
- 10. With respect to claims 33 and 46, the 32-33 interface provides a high index/low index intersection which functions as a reflection layer.
- 11. With respect to claims 34 and 44, forming the device on an SOI substrate is an obvious design alternative since the same device could be formed while gaining the advantages of the SOI structure such as isolation from substrate noise injection.
- 12. With respect to claims 35 and 45, Benton et al. show the layers are epi (column 4, line 27).
- 13. With respect to claims 36 and 43, the Benton et al. structure is ribbed.
- 14. With respect to claims 37 and 47, the Benton et al. substrate is Si.
- 15. Claims 28, 30 39 and 41 47 rejected under 35 U.S.C. 103(a) as being unpatentable over Benton et al. in view of Coffa et al.
- 16. With respect to claims 28 and 38, Benton et al. show a laser (cover Figure and column 2, line 59 et seq.) with a semiconductor substrate 31, a doped p/n junction 33-34 which inherently

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has a depletion region, a shape (ridge) defining a waveguide (column 3, line 67) and is doped with Er. The Er is in the core region 33 which will contain the depletion region. The device can serve as a coherent light source (laser) (column 4, line 67). Benton et al. do not show the biasing source but it is assumed to provide a forward bias, as is customary with a laser. Coffa et al. show that for Er doped Si diodes a higher output is obtained when a reverse bias is applied and it would have been obvious to modify the Benton et al. device to include the reverse bias shown by Coffa et al. to provide a greater output. Note that neither Benton et al. nor Coffa et al. show the biasing device but since a bias is applied it must obviously be supplied by a biasing device.

- 17. With respect to claims 30 and 39, the Er is in the core region which contains the depletion region and the region forms a p/n junction with the surrounding regions.
- 18. With respect to claims 31 and 41, the rare earth is Er.
- 19. With respect to claims 32 and 42, a clad layer of SiO₂, 23 is shown by Benton et al. (see Figure 2 and column 3, line 66) and this has a lower dielectric constant than the Si.
- 20. With respect to claims 33 and 46, the 32-33 interface provides a high index/low index intersection which functions as a reflection layer.
- 21. With respect to claims 34 and 44, forming the device on an SOI substrate is an obvious design alternative since the same device could be formed while gaining the advantages of the SOI structure such as isolation from substrate noise injection.
- 22. With respect to claims 35 and 45, Benton et al. show the layers are epi (column 4, line
- 27).
- 23. With respect to claims 36 and 43, the Benton et al. structure is ribbed.
- 24. With respect to claims 37 and 47, the Benton et al. substrate is Si.

Response to Arguments

Applicant's arguments filed 9/5/02 have been fully considered but they are not 25. persuasive.

- Applicant argues that the claims are definite and quotes the specification but no bipolar 26. device is shown in the specification.
- Applicant states that Benton et al. teach away from a reverse bias and hindsight is being 27. used in the combination with Franzo et al. but this is a simple case of combining references and since Franzo et al. show that it is an improvement, it would be obvious to apply it.
- 28. The same comments are provided related to Coffa et al. and the same response is provided.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this 29. Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

examiner should be directed to Douglas A Wille whose telephone number is (703) 308-4949. The examiner can normally be reached on M-F (6:15-3:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Patent Examiner

November 6, 2002